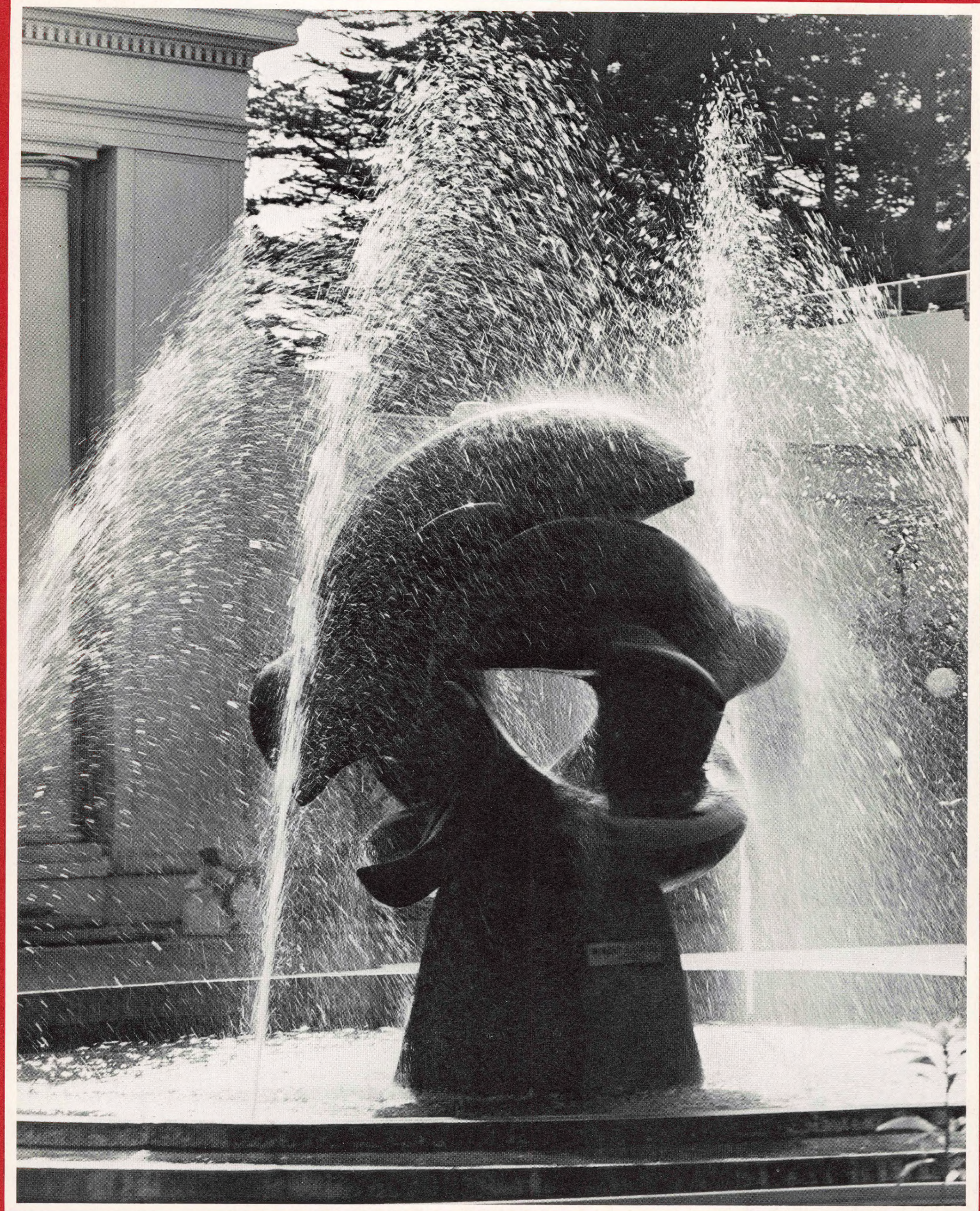
CALIFORNIA ACADEMY OF SCIENCES



ANNUAL REPORT 1976-1977

CALIFORNIA ACADEMY OF SCIENCES

GOLDEN GATE PARK, SAN FRANCISCO, CALIFORNIA 94118

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(as of June 30, 1977)

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Above, Mrs. Wilson Meyer received an expression of appreciation from Trustee Chairman Paul L. Davies, Jr., at the dedication of the Fish Roundabout. Mrs. Harriet Quarre, left, and Mrs. Earl S. Herald were interested participants in the ceremonies. Right, bronze dolphins by Victor "Trader Vic" Bergeron honor his friend Wilson Meyer in the Fish Roundabout.

A MESSAGE FROM THE CHAIRMAN

The opening of the Fish Roundabout during May was the outstanding feature of the Academy's 1976-77 fiscal year. This addition, although more than a year late in completion, has proven to have been well worth the wait. The Roundabout displays fishes in a setting in which the viewer feels surrounded by them, and it has been a tremendous success with those who visit the Steinhart Aquarium and the other areas of the Academy's museums. The dream of the late Wilson Meyer, long a trustee of the Academy, and the late Earl Herald, Associate Director, the Roundabout was the gift of the G. H. C. Meyer Family Foundation. Included among its facilities are a ground floor tide pool and some exceptional wall murals illustrative of various facets of marine life. We are grateful to have had Mrs. Wilson Meyer and Mrs. Herald with us for the dedication on May 5, 1977, at which time the new facility was accepted on behalf of the City and County of San Francisco by Mr. Quentin L. Kopp, President of the Board of Supervisors.

I shall mention briefly other highlights of the 1976-77 year:

The Alfred J. Ostheimer collection of Hawaiian artifacts was placed on display in mid-January. This collection, a major addition to our properties, was assembled by Mr. and Mrs. Ostheimer over a period of years and was given by them to the Academy.

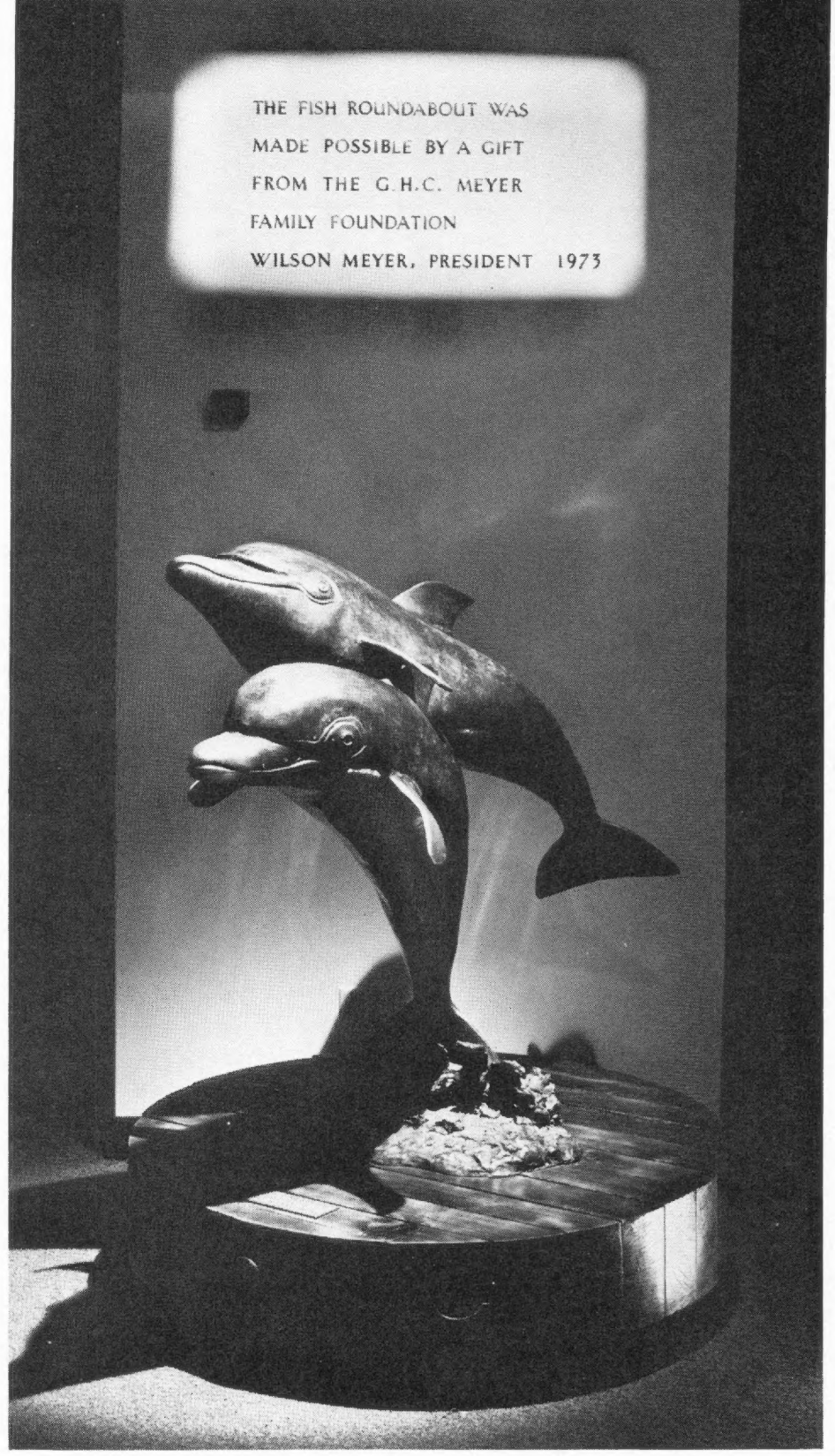
A display of "New Directions in New Guinea Art," comprised of items owned by Mr. and Mrs. Victor Bergeron ("Trader Vic") was opened in the Patricia Price Peterson Gallery, where it has been the subject of much attention by visitors. The Bergeron exhibit joined the Lewis K. Land collection of pre-Columbian artifacts which has now been on display, through the courtesy of Mr. and Mrs. Land, in the Atholl McBean Gallery for more than a year.

Additional exhibits which are being prepared for display in Wattis Hall of Man and are expected to open during 1977-78 are Traditional Rice Culture of Japan, Navigators of the Caroline Islands, and Hopi Farmers—Navajo Herders of the American Southwest.

Last year's annual report mentioned the bequest to the Academy left by William H. Noble, San Francisco and San Joaquin Valley businessman and farmer. The Entomology Department, named in Mr. Noble's memory, has received a grant from the National Science Foundation which will fund approximately one half of the cost of installing a compactor to house that department's collections; the balance will come from the Noble bequest.

The Academy's endowment has been augmented by approximately $1.5 million, dedicated toward study of the areas of air and ocean phenomena. This gift came to the Academy under the will of Miss Helen C. Lillis, as a result of the sale of substantial property owned by her and located in Fresno County. Also, a substantial gift in the form of a unitrust which will eventually benefit the Academy and Langley Porter Clinic was received during 1976-77 as the result of a gift from Mrs. Jane B. Dunaway.

The annual Fellows' Dinner was held on October 6, 1976, at which time Dr. F. Clark Howell, Professor of Anthropology at the University of California at Berkeley, was elected to the Board of Trustees to succeed Dr. Ian Campbell who had served ably since 1960 and was the Academy's president during the period from 1973 to 1975. Dr. Sylvia Earle, Curator of Phycology in the Academy's Botany Department, spoke most interestingly to the Fellows on her underwater research in Truk Lagoon. Subsequently, Mr. Peter E. Haas has resigned from the Board, and Mr. Peter B. Bedford has been elected to fill the vacancy thereby created. Dr. Campbell and Mr. Haas are sorely missed, but their successors have proven able and worthy.



Dr. George E. Lindsay has been given the new title of Executive Director of the Academy, enabling the Board to approve his suggestions of the following appointments at the most senior staff level:

Dr. William N. Eschmeyer as Director of Research of the Academy;

Dr. John E. McCosker as Director of the Steinhart Aquarium;

Dr. Lee W. Simon as Director of the Morrison Planetarium; and

Mr. Christian E. Beattie as Assistant Director of the Academy.

I acknowledge with deep regret the retirement during the year of Captain Robert D. Risser who served ably for nearly ten years as Superintendent of the Planetarium.

Our operating deficit during 1976-77 was substantial. We hope that increased attendance will reduce this burden in the year now commenced. We are reassured, however, by the fact that gifts received during the year—although restricted as to use—substantially exceeded the operating deficit.

The Academy's able staff, docents, and volunteers made possible another successful year; our debt to them, and to our members, our corporation and foundation supporters, our Friends and our Benefactors, and the City of San Francisco—is acknowledged with gratitude. The efforts and broad support which they provide make possible all that is accomplished by the Academy.

Paul L. Davies, Jr.

Paul L. Davies, Jr.
Chairman, Board of Trustees

REPORT OF THE DIRECTOR

The 1976-77 fiscal year was one of accomplishment for the California Academy of Sciences. Never before have its members been able to preview two major plant additions in the same year, as they did with the Wattis Hall of Man in July 1976 and the Fish Roundabout in May 1977. It is improbable that it could happen again.

Mr. Davies has reviewed the highlights of the year in his message on the page before this. He also expressed appreciation to the staff, docents, volunteers, the City of San Francisco, and our organizational and private supporters and benefactors who made possible another successful year. I join him and express the appreciation of the Academy's staff to those others he mentioned, but also to the members of the Board of Trustees which he heads. Mr. Davies is a sensitive but strong and wise leader of the outstanding Trustees who are responsible for the growth and accomplishments of our institution. The Academy is fortunate.

The following report is abstracted from the annual reports of the heads of each of the Academy's departments. I wish their full reports could be included, with their enthusiasm and in some cases scarcely concealed pride in their units—but that would require a very large book. I hope the following condensed information will reflect what they said.

PUBLIC ACTIVITIES

STEINHART AQUARIUM

John E. McCosker, Director. The completion of the Fish Roundabout addition was the major event of the year, and indeed of the aquarium's 54 years of public service since its opening in 1923. The Roundabout added a new dimension to American aquarium displays. The concept was that of the late Earl S. Herald and Trustee Wilson Meyer, to create an environment for pelagic, or open ocean, fishes. The facility was a gift from the G. H. C. Meyer Family Foundation. More than a ton of fast-swimming fishes were introduced into, and are now swimming through, the infinite water world created by the ring design. Mr. Jeffery W. Meyer, the Foundation President and Academy Trustee, provided the ship time and personally assisted in the collection of live sharks for the new tank. A series of special receptions for the opening of the Fish Roundabout attracted record crowds of aquarium enthusiasts and brought acclaim and kudos from visiting aquarium directors. The highly trained docents carried out their important roles as interpreters for the tidepool feature and related areas.

The Fish Roundabout was designed by Pflueger Architects and built by Cahill Construction Company. The Academy's aquarium staff, engineers, and technician Frank DeOme should also be credited for its satisfactory completion.

During the year the Aquarium's nearly 200 other reptile, amphibian, and aquatic animal displays were maintained and improved. Through the assistance of the U.S. Air Force and the Waikiki Aquarium, Curator David C. Powell was able to collect black-tipped reef sharks from the lagoon of the Canton Atoll in the South Pacific. An important display of rare reef fishes from the Revillagigedo Islands resulted from collections made by Powell and Lloyd Gomez, who participated in a joint expedition of San Diego's Sea World and the Vaughan Aquarium of the Scripps Institution of Oceanography, with the generous assistance of the Mexican Government. The Steinhart Divers, an energetic group of volunteer fish collectors, donated important display specimens from waters off Southern California and the British Virgin Islands. Walter Schneebeli, staff Aquatic Collector, made 89 collecting trips during the year and returned with 17,000 living speciments for display and research.

Two honorary staff appointments were made. Dr. Leighton R. Taylor, Jr., Director of the Waikiki Aquarium, was appointed Research Associate in recognition of his cooperation and participation in the Steinhart Aquarium's collecting and research activities, and Mrs. Robert (Lynn) Dunne, a scuba-diving docent who actively assisted in the development of the education program, was made an Associate of the department. Rachael Wortherly, the Aquarium's devoted tank window cleaner since 1946, retired on June 30, 1977. She will be sorely missed by the staff and a large following of finny friends.

The Aquarium was host to two conferences, the Western Fish Disease Conference and the Society for the Protection Of Old Fishes (a unique organization known as SPOOF and devoted to the study of primitive vertebrates), and it served as the regular meeting place for the San Francisco Aquarium Society.

While educational exhibitions are the primary mission of the Aquarium, its unique facilities are also used for research by its staff and visiting scientists. The rare flashlight fishes were subjects of documentary television programs by NOVA and BBC. Pathologists George Blasiola and Robert Dempster continued their important studies on fish diseases and their treatment, and Aquatic Biologist Edward Miller collaborated with bacteriologists from Scripps Institution of Oceanography on studies of symbiotic bioluminescent bacteria. Dr. McCosker continued research on the behavior of bioluminescent fishes and the evolutionary history of the primitive coelacanth, and he served as a Governor of the American Society of Ichthyologists and Herpetologists and a Director of the Oceanic Society. He led a marine research expedition to the Galapagos Islands during which a number of new species of fishes were discovered, in connection with studies of the fish fauna of the waters around that archipelago; and on another occasion he and Sandra McCosker led an Academy members' trip to the Galapagos.

Steinhart Aquarium receives substantial support from the City of San Francisco, as well as the generous supplemental funding provided by many friends and benefactors. Among the individuals and organizations who supported the Aquarium this year were the G. H. C. Meyer Family Foundation, Mr. and Mrs. Jeffery W. Meyer, Mr. and Mrs. Harry Johnston, the Janss Foundation, Mr. Edwin Janss, Jr., the Charline H. Breeden Foundation, Mr. Vic Breeden, Mr. and Mrs. Foster Bam, Mr. Fred Yando, Mr. and Mrs. Maurice Rakowicz, Steinhart Divers, and United Airlines.

This has been an outstanding year of achievement for Steinhart Aquarium. Many persons are responsible, including the generous financial supporters, the excellent staff, and the volunteers who help and work with the staff. The Aquarium's unprecedented level of excellence, however, must be attributed to the ability, effort, and leadership of its Director, John McCosker.

MORRISON PLANETARIUM

Lee W. Simon, Director. The interest in Morrison Planetarium's presentations continued to increase and attendance at astronomical shows was twelve percent greater than last year. There were 803 performances of five regular planetarium programs which attracted 138,-583 people. The new show "Exploring the Skies of the Season," which was

The Fish Roundabout, which was a gift to the Academy and San Francisco from the G. H. C. Meyer Family Foundation, is a neat four-story structure adjacent to Steinhart Aquarium.

offered only on Saturday and Sunday mornings beginning in September, was attended by 6,765 people.

One hundred ten special student shows were seen by 26,652 children who came in class groups. This attendance represents an increase of nine percent over that of last year—a reversal in the downward trend of school-show attendance since 1971.

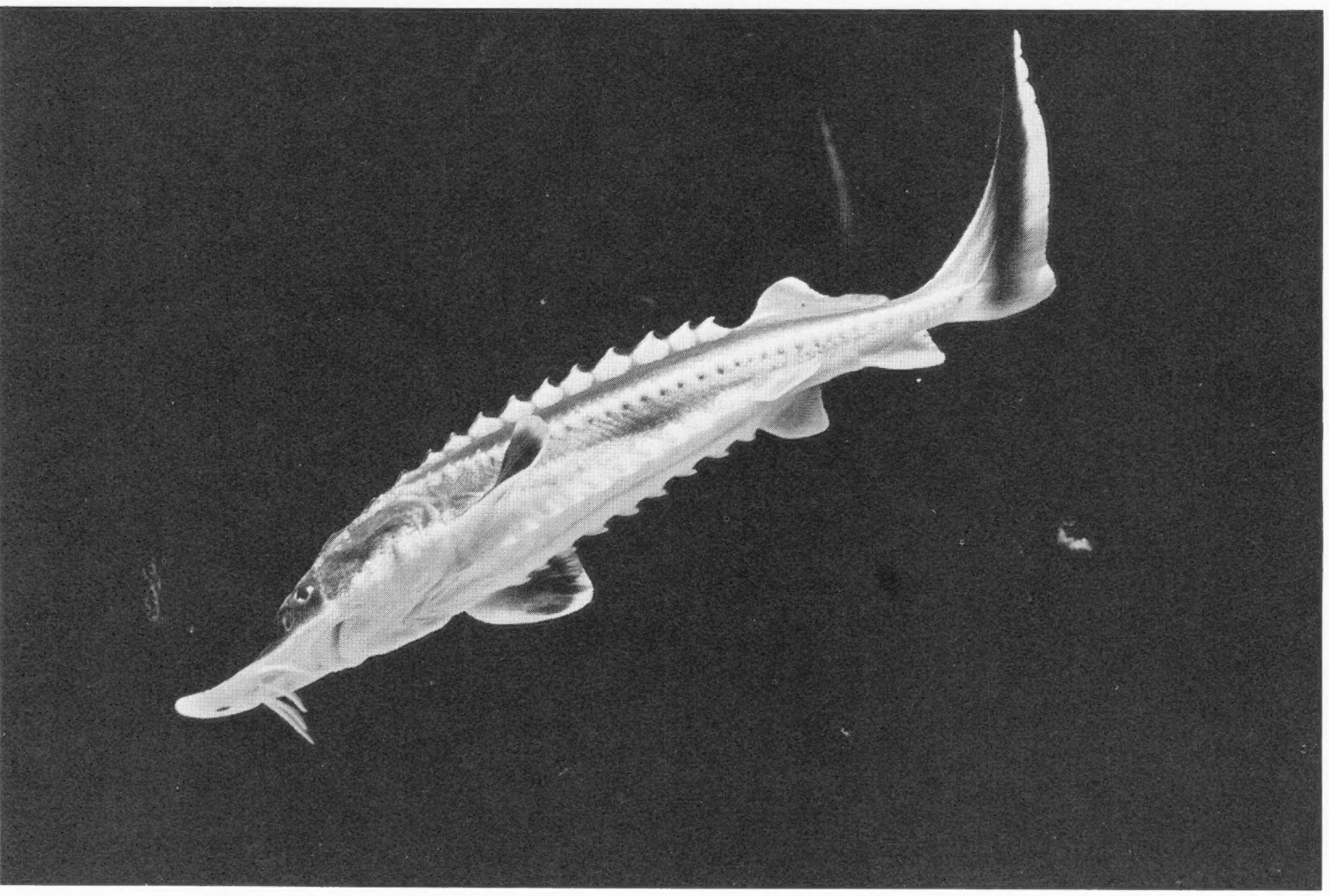
Attendance at 601 Laserium shows was 136,566, a decrease of fifteen percent. The addition of the Laserium II feature in May, plus a new krypton laser projector, is expected to stimulate new interest and increased attendance during the year ahead.

Total admissions to Morrison Planetarium were 308,566, and net income was $177,354.

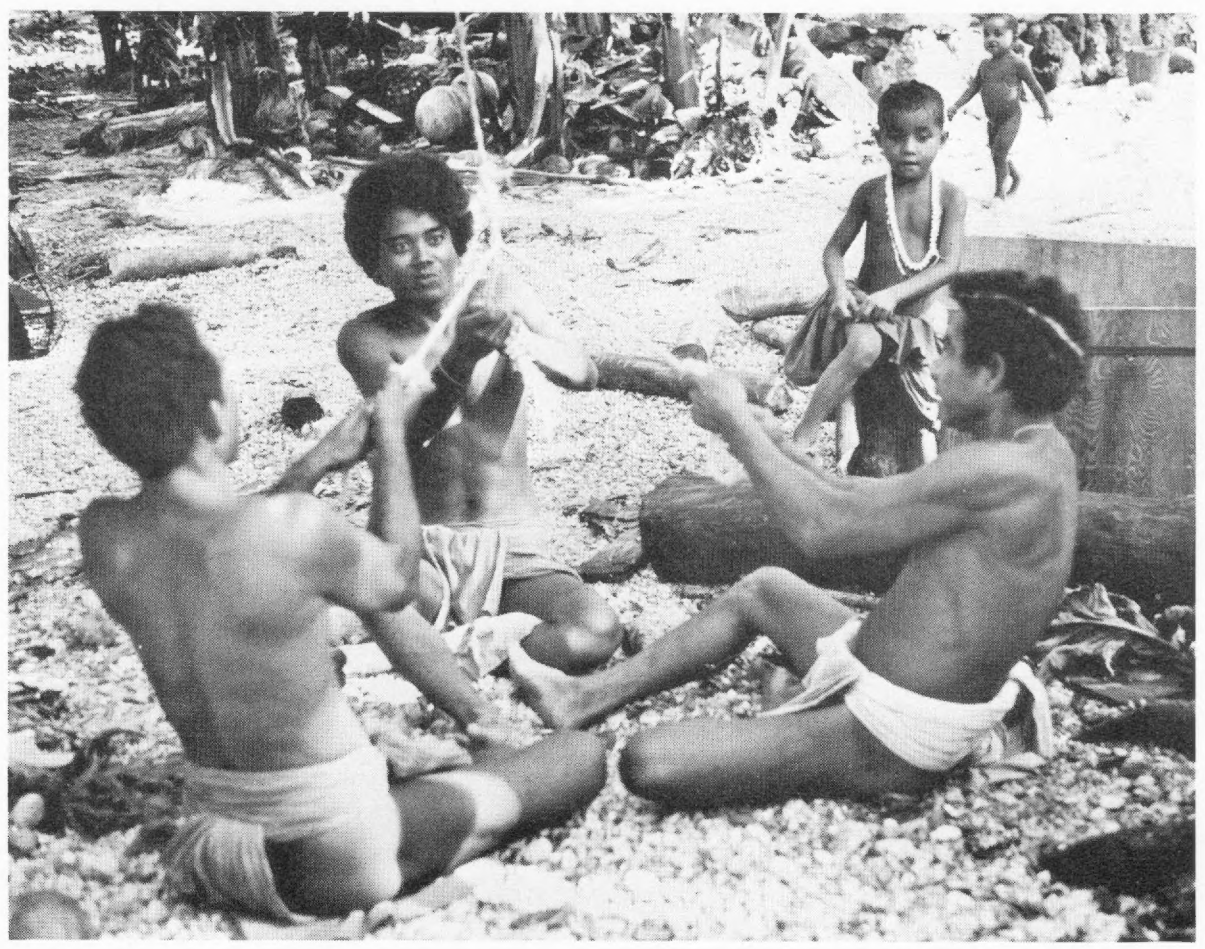
Because of the excellent fiscal management of Captain Robert D. Risser, who retired in January 1977, funds were accumulated for a major modernization program for the Planetarium. This was started last year, with the remodeling of the Planetarium entrance and the overhauling of the control room electrical systems. A beautiful new railing for the Foucault Pendulum was installed this year. Looking ahead, the Planetarium will be closed for the installation of new carpeting and seating after Labor Day, 1977. Later, a new panorama projection system will replace the present one in the Sky Theater, and an art studio and photographic darkroom, for the production of special effects, will be constructed.

Captain R. D. Risser, U.S.N. (Ret.) came from Kirkpatrick Planetarium to head the Morrison Planetarium staff in September, 1967. On his arrival he initiated an improvement program and planned a major remodeling and overhaul to begin in 1977. Working toward that end he reserved part of the Planetarium's earnings and, with the financial success of Laserium, was able to accumulate the necessary funds. When Captain Risser decided to retire by the first of January, 1977, he recommended that Dr. Lee W. Simon, an astronomer and Program Supervisor at Adler Planetarium in Chicago, be invited to succeed him. Morrison Planetarium is deeply indebted to Captain Risser for his decade of quiet and effective direction and planning for the future, and for his choice of his successor.

Right, Aquarium staff and volunteers collected deepsea specimens from the Moss Landing Laboratory's research vessel. Below, rare Volga sturgeons were received by the aquarium from a Moscow University scientist.



Right, rope-making on Ulithi Atoll, as photographed by Sandra McCosker during her Micronesian research trip in preparation for a Wattis Hall of Man feature.



EXHIBITS DEPARTMENT

Robert Bjorkland, Chairman. The complete reorganization of the areas occupied by the Exhibits Department was the first priority following the opening of the Wattis Hall of Man. For many years much of the department's space was filled with stored anthropological collections. Their removal freed space needed for exhibit preparation. Structural modifications, removal of the artifacts, and reallocation of the newly available space required several months.

About one-third of the permanent exhibits planned for Wattis Hall of Man were completed when it opened at the start of the fiscal year. Work on the rest of the exhibits, with support of grants from the National Endowment for the Arts and the San Francisco Foundation, was undertaken. Curator Ernest Rook and Sylvia Ryugo planned a Traditional Japanese Rice Culture exhibit, which was nearly completed during the year. Architect Robert Fritschi built a Japanese house which dominates that display. A grant from the Janss Foundation enabled Sandra McCosker to travel to Palau to plan and obtain the materials for a Micronesian unit. An exhibit contrasting the cultures of the southwest Hopi and Navajo Indians was sponsored by Paul L. Wattis Jr. and Carol Wattis Wilmens. This was planned by Nancy Bronstein and will be constructed next year. The preliminary planning of two remaining exhibits, one showing a herdsman culture and the other high altitude agriculture, was started.

Stuart Meehan planned and executed a major show on Space Settlements using materials lent by the NASA-Ames Research Center and Rockwell International Corporation. Located in Lovell White Hall, this exhibit has attracted much public interest and was televised nationally on two network programs.

A major exhibit which opened in Lovell White Gallery on January 12, 1977 displayed the Ostheimer Collection of pre-contact Hawaiian artifacts which Mr. and Mrs. A. J. Ostheimer, III gave to the Academy some months before. It will remain on display through 1977. "New Directions in New Guinea Art," featuring masks, dance costumes, shields, figures, and carved house posts from the collection of Victor J. (Trader Vic) Bergeron, opened in the Patricia Price Peterson Gallery in April and will remain until October. Selections from the Pre-Columbian collection of Mr. and Mrs. L. K. Land were shown in the Atholl McBean Gallery through the year, with changes and additions to the exhibition, which will also continue until October.

Temporary shows in Hohfeld Gallery, Lovell White Gallery, and the Cowell Hall Lower Gallery included the Birger Ander-

son Collection of Contemporary Eskimo Art; Underwater Photographs by Ed Janss; Lunar Exploration; Man and His Environment; Adaptive Illusions in Nature, photographs by Edward S. Ross; Yosemite and the High Sierra; the Viking Mission; New Guinea Lowlands; and Bird Portraits by Ron Shunk.

Sandra McCosker directed a Living Arts program which brought artists, weavers, potters, dancers, musicians, and other performers and demonstrators to the stage in Wattis Hall of Man as well as Morrison Auditorium. The series, sponsored by a matching grant from the National Endowment for the Arts, was coordinated by Elaine Cahn.

DOCENT COUNCIL. Mrs. Joseph Hall, Chairman, and Diane Butler, Secretary-Coordinator. Nearly 13,000 students and other visitors were given a personal look at the Academy by the 115 members of the Docent Council, through tours and special programs. Many thousands of others were assisted by these enthusiastic volunteers serving as monitors in Wattis Hall, supervising the new Tidepool, and serving as hostesses and hosts at Academy functions.

The docent *Supervan* takes science enrichment programs to students in their classrooms. The *Supervan* was jointly funded by the Docent Council and the National Endowment for the Arts.

A 280 page docent training manual, "On Exhibit," is ready for the 1977 courses, after three years of preparation. It will also be available for teachers and others who utilize the Academy for studies in the natural sciences. Another long-term project realized during the year is a mural map of the ocean's currents and temperatures, located in the Roundabout, which was provided in part by the Docent Education Fund in memory of Earl S. Herald.

Many refresher courses, new courses, field trips, and the newsletter TOURisms, kept the docents informed and fresh. Dr. Robert T. Orr continued as Advisor for the Docent Courses, and Mrs. Ernest R. Lilienthal provided liaison with the Board of Trustees.

DEVELOPMENT AND MEMBERSHIP. Kathleen F. Bowman, Development Officer. There were 9,514 adult members on July 1, 1977. Trustee Mrs. Ernest Lilienthal chaired the Membership Committee.

Four thousand seventy-seven members attended the previews of the Fish Roundabout in May, and more than 10,000 came to the monthly members' meetings which are scheduled by the Education Office. Such large attendance was possible because there were three sessions of each meeting.

More than 200 volunteers, in addition to the docents, give regular service in nearly every department. In the Aquarium youthful biologists clean tanks and feed animals, and occasionally they relieve regular docents who monitor the tidepool exhibit. Twenty-five volunteers serve at the information desks. The Picture Collection is staffed by volunteers. More than 100 work in the scientific departments. Frances Reed, Development Secretary, is also the Volunteer Coordinator. Volunteers are listed on pages 18-19.

Trustee John A. Sutro is Chairman of the "Friends of the Academy," the generous supporters who give $1000 or more each year. This year there were seventy-eight "Friends" who are listed on page 21.

Trustee Frank E. Hayward was Chairman of the Corporate Support Committee. This important group of business and industrial sponsors of the Academy is listed on page 20.

JUNIOR ACADEMY. Kenneth E. Lucas, Supervisor. There were 460 members of the Junior Academy, each of whom took one or more of the 29 courses which were offered. Parent participation was encouraged in a number of the courses, and one evening class, Rooftop Astronomy, was designed especially for the entire family.

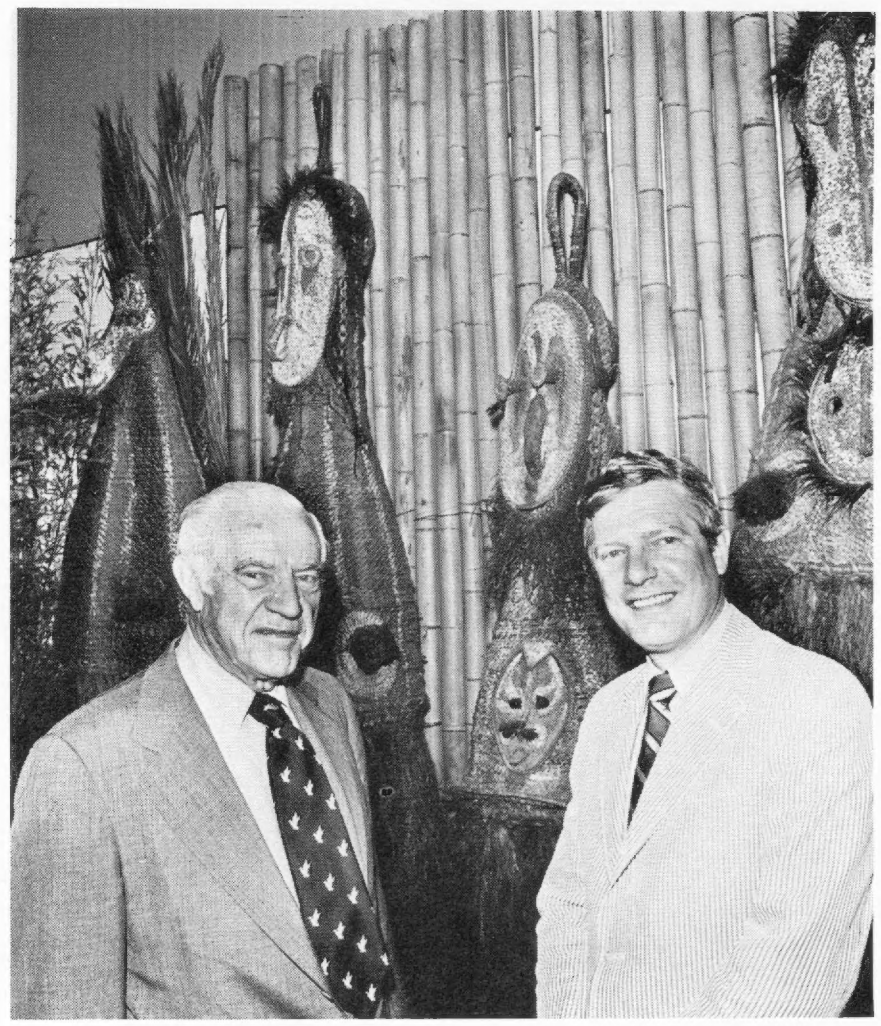
For many years Junior Academy activities were offered to young people between nine and eighteen years of age. A new program for "science tots," six to eight years old, was initiated. The courses, designed for parent participation, emphasized the experience of handling and studying objects.

The Junior Academy also provided lectures and demonstrations for school class groups, special tours and study materials for blind children, teacher loan collections, Boy Scout natural science merit badge counseling, and other community services. The Junior Academy lecture room and laboratory were used by Science Fair, Sierra Club, Fungus Fair, and other organizations with related interests.

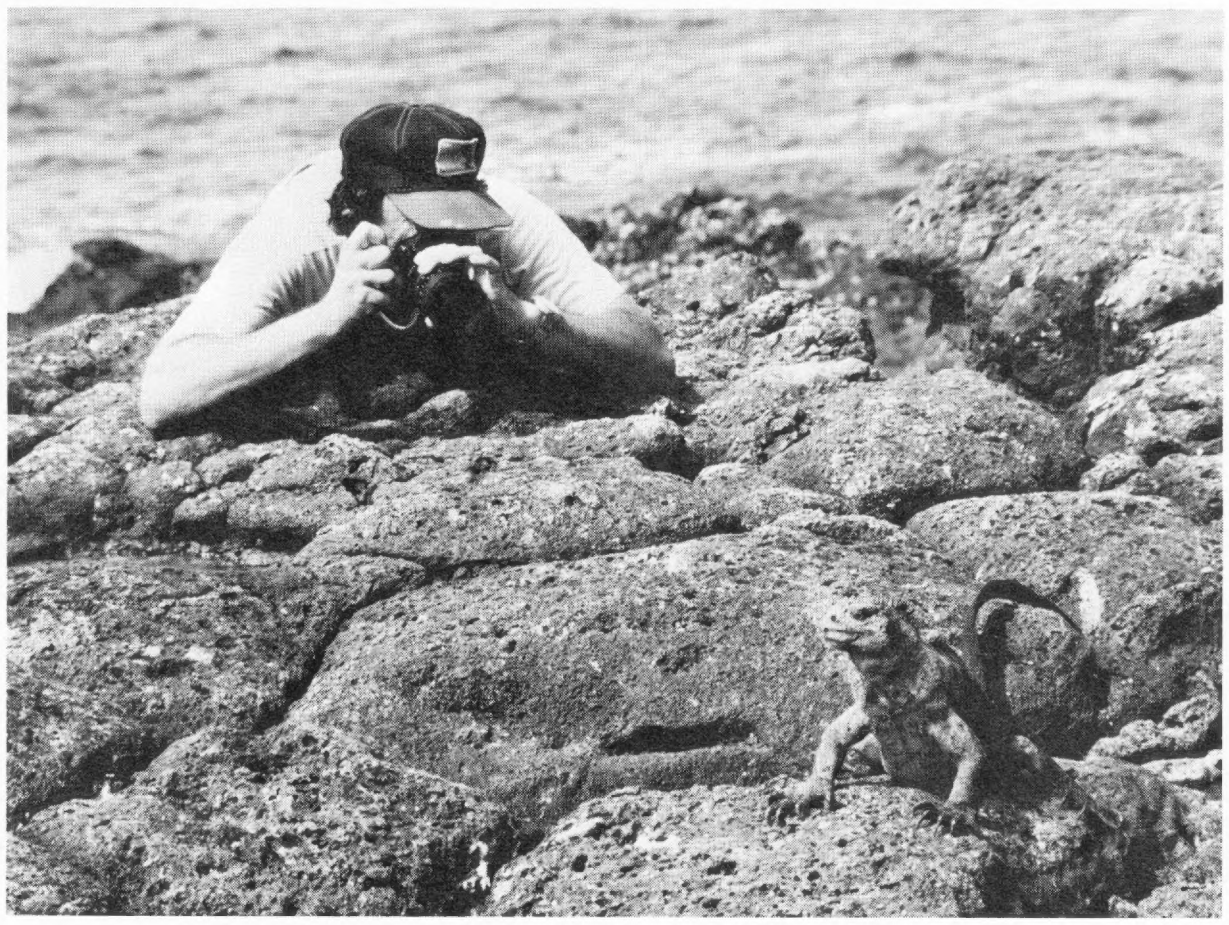
The Junior Academy provides rare opportunities for scientifically inclined young people to study under the research scientists of the Academy who serve as instructors for many of the courses. Some Junior Academy members advance into careers in science or medicine, and all probably have richer lives because of an appreciation and understanding of the natural world gained during their early years.

EDUCATION OFFICE. Lysbeth Fritz, Coordinator. The Education-Travel Office is responsible for the Academy's adult education program, members' trips, and monthly members' programs.

Nineteen classes were offered, all related to natural science, astronomy, or nature photography, and 467 students enrolled. In addition, there was a one-day symposium, "Marine Mammals of



Above, Victor Bergeron and Lynn Bergeron at the opening of the show "New Directions in New Guinea Art." Center, Mr. and Mrs. Alfred Ostheimer attended the first exhibition of the Hawaiian artifacts which they presented to the Academy. With the Ostheimers and decorated with leis are, from the left, Aquarium Director John McCosker, Board Chairman Paul L. Davies, Jr., and the Academy's Assistant Director, Chris Beattie. Below, travel representative Robert Dagley, left, greeted Mr. and Mrs. Eugene A. Shurtleff at the start of a members' trip.



Academy members' trips touched many parts of the world, including Alaska, above; the Galapagos Islands, center; and the Baja California peninsula, below.

the Pacific," and 1,431 people attended a series of anthropological lectures co-sponsored by the L. S. B. Leakey Foundation.

The Travel Committee, chaired by Geraldine K. Lindsay, planned and carried out 22 trips of varying lengths in which 692 members participated. Lysbeth Fritz arranged most of the local, short-duration excursions and accompanied many of them. There were members' trips every month. The longer ones went to Alaska; around the world through Mongolia; overland the length of Baja California; through India and Nepal; to Guatemala; and to the Highlands and islands of Scotland. Each trip was led by an Academy staff member.

Selection of the monthly members' meeting programs was the responsibility of the Education Office. Ten programs were offered, and each was attended by more than 1,000 members and guests. Two members' previews of new facilities were held, for Wattis Hall of Man in July, 1976, and for the Fish Roundabout in May, 1977. The attendance at these previews exceeded seven thousand members.

J. W. MAILLIARD, JR. LIBRARY. Ray Brian, Librarian. This was a year of satisfying accomplishments. The reclassification of the Geology Department library from the Dewey to the Library of Congress system having been accomplished, attention was turned to the Aquarium library. Availability of computer time permitted the utilization of the Stanford BALLOTS program to obtain cataloging information rapidly. The California Library Authority for Systems and Services, a cooperative effort to provide improved service through pooled efforts, was joined. There is encouraging evidence that the rapid inflation rate in journal and book rates may be tapering off.

Mailliard Library subscribed to 357 journals, and exchanges were maintained with 608 other institutions and societies. There was a slight decrease in the number of books loaned to other libraries, and loans of hard-to-find materials went to libraries outside the United States in greater quantities than in previous years. For the first time the Mailliard Library was able to answer most requests with photocopies rather than by sending the actual publication.

As is previous years, generous friends enabled the library to make a special, costly purchase. It was a research resource titled *Research Catalog of the Library of the American Museum of Natural History.*

PACIFIC DISCOVERY. Bruce Finson, Editor, and Johan Kooy, Art Director. The Academy's natural science magazine appears every two months, and has a circulation of more than 11,000. Dur-

ing the year 27 articles about diverse subjects and areas appeared, including the Himalaya, New Zealand, the Galapagos, and the Andes.

Pacific Discovery receives printing industry awards every year, although it is a black and white magazine when most are in color. The Editorial Board members read many manuscripts which the Editor has approved as possibly acceptable, and from these select those which will be used. Johan Kooy is responsible for the attractive page layout and photographic selection of *Pacific Discovery* and the *Annual Report.*

Robert I. Bowman, Robert C. Miller, and Robert T. Orr are Associate Editors, and George Lindsay is Managing Editor.

PICTURE COLLECTION. Johan Kooy, Chairman. The Academy's Picture Collection is a visual history of its development, documenting the changing nature of its research and expeditions. Here are housed the museum's collections of natural history photographs, paintings, drawings, and printed graphics.

More than one million photographs and illustrations are classified by subject in the Reference Collection, and over 3,500 of these were used to develop exhibits, planetarium shows, lectures, and to illustrate Academy publications during the year.

A project of remounting slides in the colored transparency section was completed this year. About 23,000 slides are now indexed by scientific and common name, photographer, and location.

Miniature images of plants, animals, and the diverse cultures of man are represented in the expanding stamp collection. A series of changing exhibits from the philatelic holdings was initiated during the year in the entrance lobby between the Atholl McBean and Patricia Price Peterson Galleries.

Pictorial and financial gifts are responsible for the growth of the department. Important support received from Mrs. Helen Peterson and Mr. John Vinton, and philatelic contributions of Mrs. Henry Cartan, Mr. Lowell J. Myers, and Mr. Herman Gross were particularly noteworthy. Generous gifts of slides were received from Mr. Jules Strauss and Mr. and Mrs. J. V. C. Gregory, and fine prints came from Miss Muriel French.

Eighteen volunteers gave countless hours processing many thousands of accessions and loans during the year.

PUBLIC INFORMATION. Pam Wing, Information Officer. The Academy enjoyed "good press" this year. Mrs. Wing provided releases, generated stories, and supplied information and assistance for magazines, newspapers, and television and radio. Stories were carried about new exhibits, staff activities, the living arts programs, and of course the opening of the Fish Roundabout, which received national attention.

Mrs. Wing also writes the monthly *Newsletter* for the membership, distributes promotional material to appropriate recipients, and answers public inquiries.

Staff Photographer Lloyd E. Ullberg covered newsworthy events at the Academy and provided prints for new releases, the *Newsletter, Pacific Discovery,* and the Exhibits Department. He photo-documented the holdings of the Anthropology and other departments, and was on call to meet photographic needs of the institution. Scientific Photographer Maurice Giles photographed scientific specimens for staff members' scientific publications and records, and made multilith plates for the print shop.

INSTRUMENT SHOP. Steven B. Craig, Superintendent. The Instrument Shop not only manufactures and repairs instruments and projection equipment, but also performs maintenance service for all departments of the Academy. It manages the printing shop, is responsible for electrical installations, provides the keys and locks and other security devices and alarms, and is a service organization for the entire institution. Additionally, its personnel were responsible for approval of electrical, engineering, and other plans for the Roundabout, and final technical inspection of that facility.

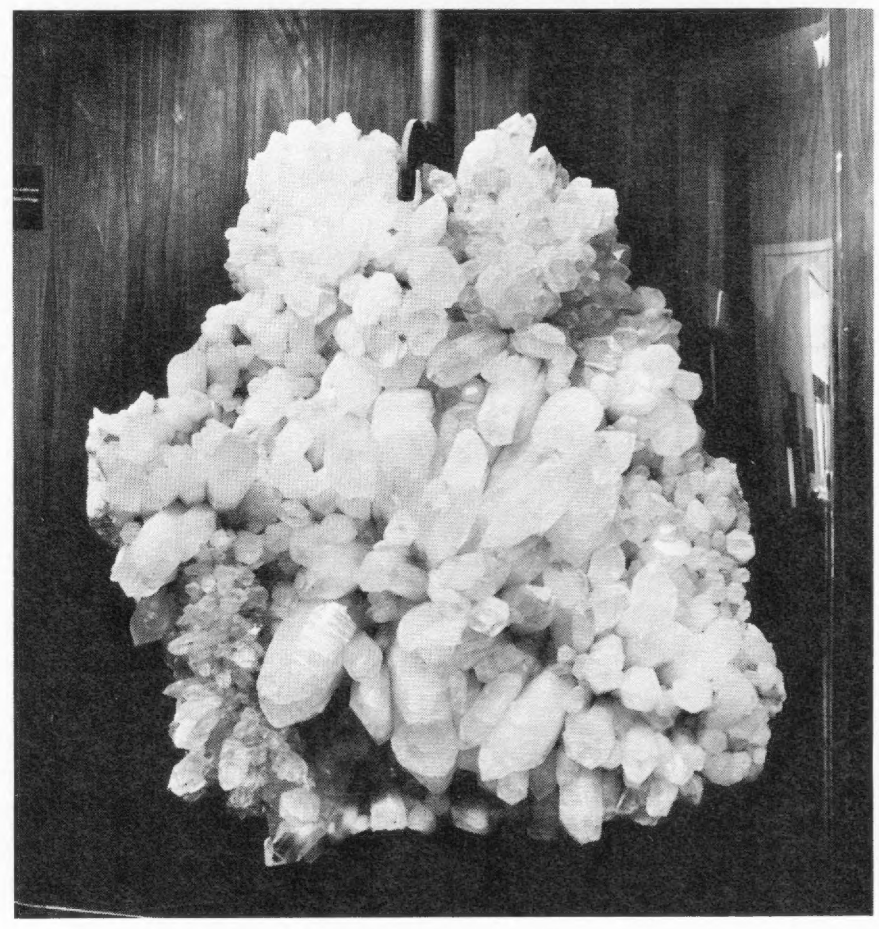
CABINET SHOP. Bradley H. Buchanan, Superintendent. The Cabinet Shop was established as a separate department at the start of the year. It, like the Instrument Shop, provides services for all the other departments.

Preparing a large climate-controlled collection storage room for the Anthropology Department, expanding the Invertebrate Zoology and Geology Departments, and providing cabinetry and bookcases and other equipment for several departments were some of the projects accomplished.

The development of exhibit cases and structures for the Wattis Hall of Man is a continuing activity, as is the construction of exhibit furniture for other public areas.

RESEARCH ACTIVITIES

The principal mission of the California Academy of Sciences is the search for knowledge in the natural sciences. Most of the research is in systematics, the classification and understanding of the evolutionary relationships of organisms. That research leads to the accumulation of vast collections and the



New and temporary exhibits that opened during the year included the Victor J. Bergeron collection of New Guinea artifacts, above; a 1300-pound mass of quartz crystals at the entrance to Mineral hall, center, and the Ostheimer collection of pre-contact Hawaiian artifacts, right.

obligation to maintain those collections, and to keep them available for the studies of other scientists. The specimens in the collections are the vouchers for past investigations, and the materials for those of the future.

Dr. William N. Eschmeyer, who was appointed Chief Curator in 1975, was named Director of Research on May 18, 1977, and is responsible for all research activities and departments.

The following report indicates the growth and scope of the scientific work of the Academy during the past year.

ANTHROPOLOGY. Joan Bacharach, Acting Chairman. The Anthropology Department, which was reactivated July 1, 1975, moved into its quarters on the top floor of the African Hall Building, and occupied areas which were formerly the Academy's Executive Offices and Entomology Department. A large collection room was light-proofed and climate-controlled, and anthropological materials formerly stored in the Exhibits Department were installed there. Additional new collections were acquired, including 270 specimens which were purchased and 635 which were received as gifts. All the artifacts are being inventoried and cross-indexed by culture area and material function.

Furniture and equipment for the new offices was purchased with funds provided by Mrs. Elsie Rietz and the Wilson and George Meyer Company. The James Irvine Curatorial Chair of Anthropology endowment supplied funds for personnel.

The Anthropology Department is involved with the development of the exhibits in the Wattis Hall of Man as well as the temporary exhibitions which are about peoples or cultures. Nancy Bronstein and Sandra McCosker carried on the research for Southwest Indian and Micronesian units in Wattis Hall. The department's main responsibility will continue to be the proper preservation of priceless collections and assistance in their exhibition.

BOTANY. Elizabeth McClintock, Chairman and Curator. The work of integrating the specimens of Dudley Herbarium and the Academy herbarium continued through the year, with the financial support of the National Science Foundation. Approximately 18,000 new specimens were accessioned into the herbarium, which now has about 1,350,000 sheets.

The compactor storage system required rewiring in order to meet the Underwriters Laboratory standards before its final acceptance by the Academy. The work started in April, 1977 and is expected to be completed during the summer.

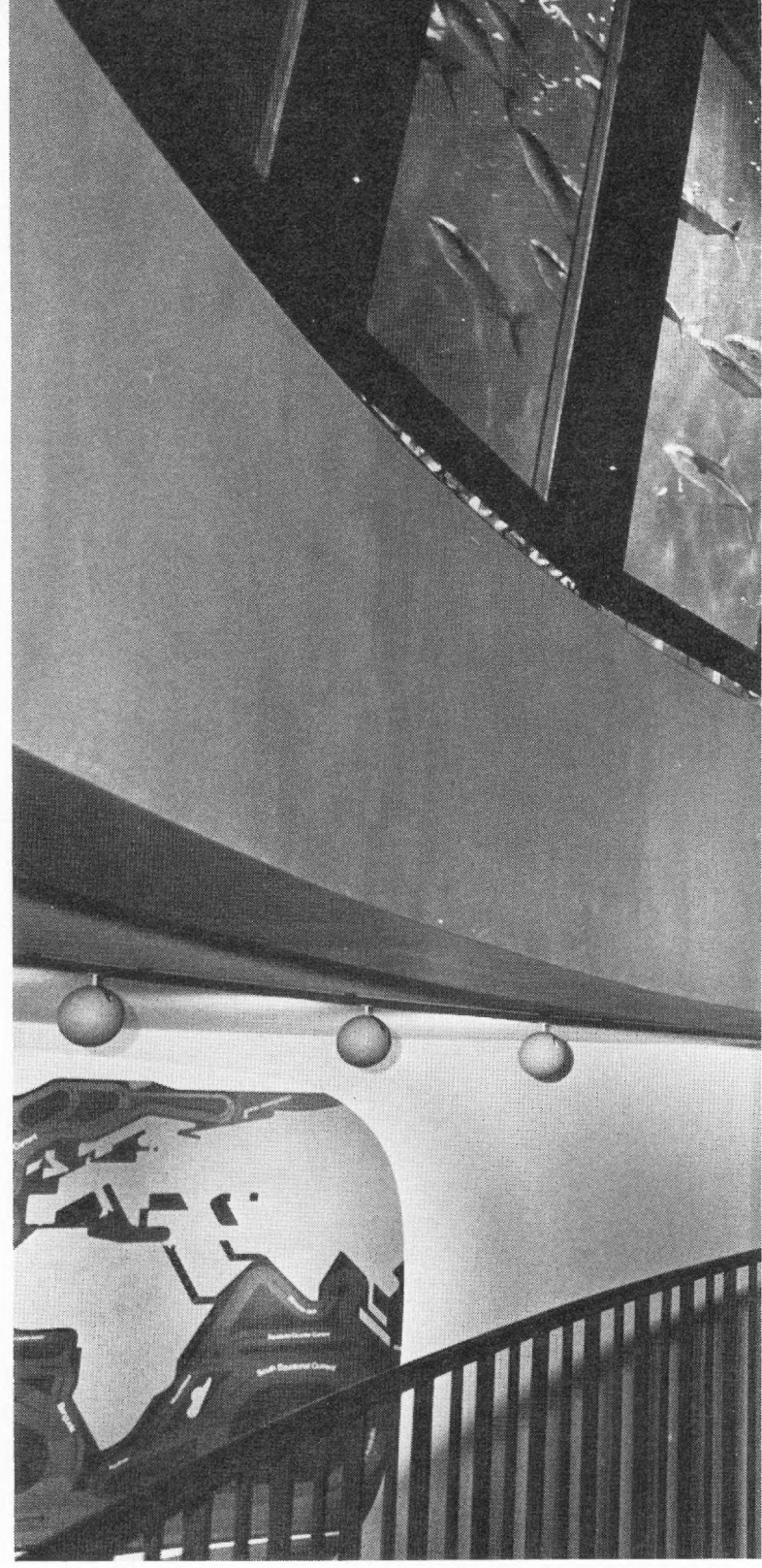
Dr. Breedlove spent five months conducting field work in the Mexican state of Chiapas, during which he collected 9,400 herbarium specimens. The second half of the year was required for their sorting, labeling, and identification. The field work was made possible by a grant of $14,000 from the Stanley Smith Horticultural Trust, of Great Britain, for the purpose of collecting living material or seeds of attractive plants of potential horticultural interest from the endangered high elevation cloud forests of Chiapas. This work yielded more than 250 species not previously cultivated in California, and they are being grown in the University of California Botanic Garden and the Saratoga Horticultural Foundation. A second grant of $5,000, from the Smithsonian Institution, was for an ethnobotanical project done by Dr. Breedlove in collaboration with Dr. Robert Laughlin.

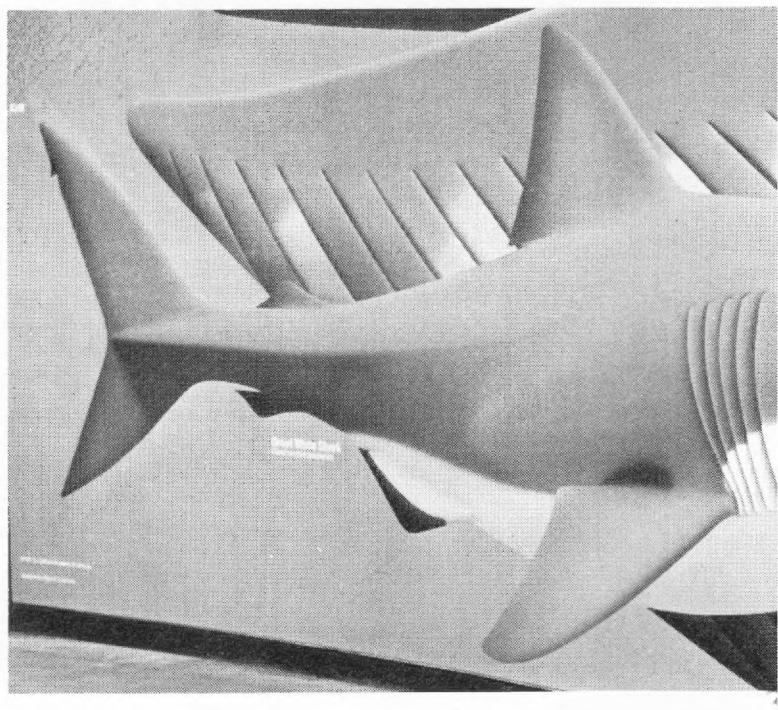
Dr. McClintock worked on a checklist of woody ornamental plants of California, Oregon, and Washington, and continued to accumulate information about the poisonous plants of California. Mr. Howell's research concerned the flora of the Sierra Nevada, on which he has worked for many years. Dr. Thomas continued his research on the flora of Central California as well as on several other smaller projects. Mr. Gordon True continued collecting in Nevada County, in preparation for a flora of that area of the Sierra Nevada.

Dr. Sylvia Earle collected algae in Hawaii, Australia, New Zealand, the Caribbean, and intensively at Santa Catalina Island, off Southern California. She was also active in national and international problems of conservation, and on a project studying and filming humpback whales. She gave the Fellows' Lecture at the Academy, and was a featured speaker at the Fourth International Congress of the World Wildlife Fund. She also spoke in Australia as a guest of the Australian Government.

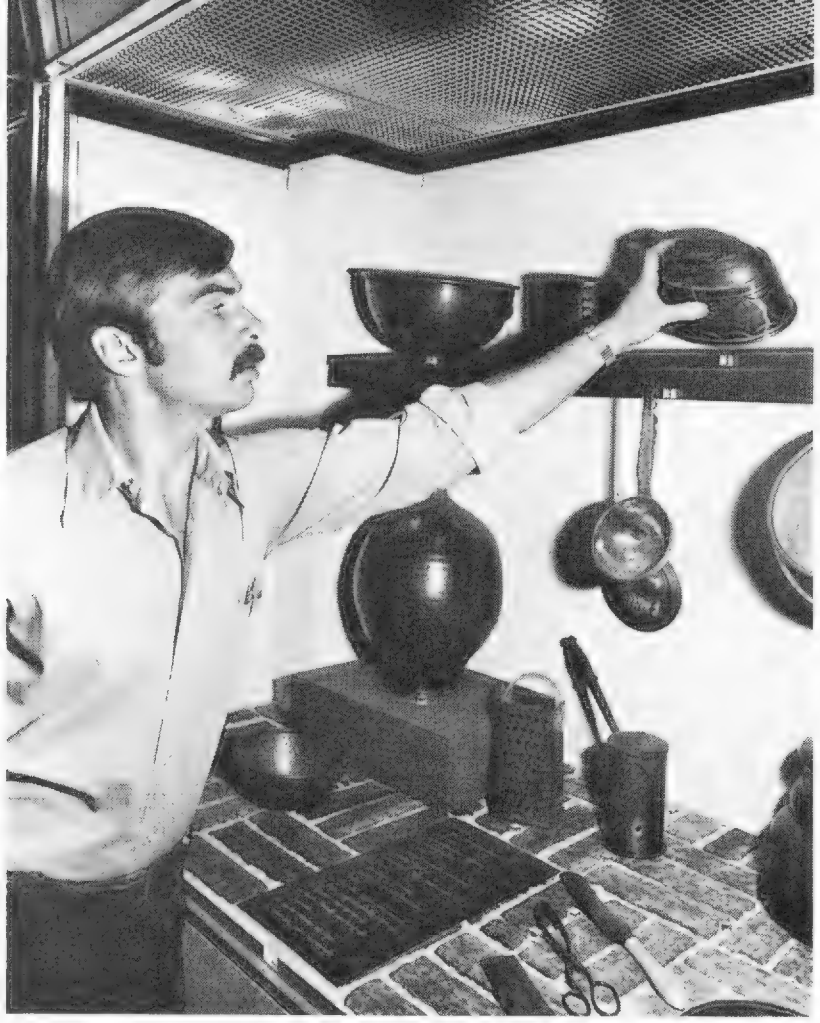
As with other research departments, the scientific staff is frequently called to make identifications and for other information. During the year 433 professional botanists and college and university students visited the Botany Department to use the herbarium and library. An additional 677 visitors came in for plant identification or to see the new compactor storage faciilties, the first on the west coast. Other visitors came in class groups, the total being over 1,200.

ENTOMOLOGY. Paul H. Arnaud, Chairman and Curator. The insect and arachnid collections contain approximately 6,397,800 specimens, 103,622 having been accessioned during the year from 164 individuals, expeditions, and institutions. There are now 13,012 specimens in the type collection, of which





Left above, the Fish Roundabout as seen from the access ramp. Center, Roundabout mural by Wayne Creekmore. Below, specimens being welcomed by Aquatic Biologist Tom Tucker and Aquarist Alfred Castro. Right above, Mrs. Charles Porter, Mrs. George Lindsay, and Mrs. Wilson Meyer at the Fish Roundabout dedication. Center, Dr. McCosker and Information Officer Pam Wing with a leopard shark destined for the Roundabout. Far right, a most popular feature of the new Roundabout is the tidepool exhibit in the lobby.



522 primary types were accessioned in the report period. Loans of 95,485 specimens were made to 185 persons in 286 transactions, and specimens were sent to 17 foreign countries as well as to many locations in the United States.

The National Science Foundation provided $43,500 for curatorial support and equipment for the department, including the salaries and overhead of two technical assistants and one half-time curatorial position. This grant was completed on May 31st. The National Science Foundation approved a new grant which started on June 1st, with first-year funding in the amount of $150,000. Of this, $105,342 will pay half the cost of a compactor storage system, the other half being provided by the Academy from the William Noble bequest. The new specimen storage system will accommodate 29,344 insect drawers, doubling present collection capacity.

Particularly noteworthy collections received during the year included 238 primary types of horse flies (Tabanidae) from Dr. Cornelius B. Philip, 3,485 Phalacridae (shining flower beetles) from Michael E. Prokop, and 4,333 American butterflies from the collection of the late James K. Lochead, formerly President of the American Trust Company (now Wells Fargo Bank) and an Academy Trustee and Patron. The Lochead Collection came through the Piedmont School District. Other important collections were donated by Dr. Dennis E. Breedlove, Thomas W. Davies, Dr. David C. Rentz, Dr. Edward S. Ross, Dr. James W. Tilden, and Dr. D. Dee Wilder. Mr. Paul C. Wilbur donated his important Odonata (dragonfly) library.

The research activities of the staff included Dr. Arnaud's study of Tachinidae for five weeks in European museums, continued research on the Embidina by Dr. Ross, including three months of field work in Mexico and Central America, Mr. Kavanaugh's revision of the systematics of the Nearctic carabid beetle genus *Nebria,* and Dr. Rentz's studies on both American and southern hemisphere shield - backed katydids. Dr. Wilder completed a revision of the parasitic fly genus *Ptilodexia,* Dr. Philip continued his studies of Neotropical Tabanidae, and Dr. Smith completed morphology studies sponsored by a National Science Foundation grant.

GEOLOGY. Peter U. Rodda, Chairman and Curator. During the year 227 lots of Recent shells and fossil invertebrates were accessioned, and the department's holdings now total 58,341 lots. In addition, the Stanford University shell and fossil collections were transferred to the Academy on indefinite loan. A new conchology section and collection storage area was provided in the refurbished former television studio, and herbarium storage cases which became available when the Botany compactor was installed were adapted for shell storage. The Academy-Stanford collection, containing an estimated one million specimens, is housed in the new shell room and will be integrated into a single systematic collection. The combined collection is of world-wide scope but is especially rich in marine species from the Eastern Pacific and land snails from western North America.

The fossils transferred from Stanford include the Cenozoic stratigraphic collection and systematic collections of fossil cephalopods and echinoids. The combined Academy-Stanford fossil collection is housed in the department's ground-floor collection room. The fossils are arranged in geographic order within major geologic periods, and the two collections have been integrated at this general level, with complete integration to be accomplished in the future. The major portions of the collection are mollusks from Cenozoic and late Mesozoic rocks of the Pacific coast of North America from Alaska to Mexico.

A large number of reprints received with the Stanford collections will be incorporated into the department reprint collection.

Other noteworthy acquisitions which have not been accessioned include 4,326 lots of Recent mollusk shells from the estate of Allyn G. Smith, who died during 1976. Mr. Smith was long associated with the Academy, holding administrative and research positions following his retirement from his business career as an executive of the Pacific Telephone Company. He was an active scientist throughout his lifetime.

Mr. and Mrs. William D. Pitt donated 282 lots of marine shells and fossil invertebrates from the Queen Charlotte Islands, British Columbia, Costa Rica, and Panama. Mr. and Mrs. Clifford H. Ames gave 96 lots of marine mollusk shells, most of which were from Japan. Dr. Robert Kleinpell donated 71 microslides of Cenozoic fossil foraminifera from the Philippines. Mr. Bernard Hartley donated 50 slides of diatoms from England.

Mrs. G Dallas Hanna, Research Associate, continued her full time volunteer service caring for the important diatom collections and library. Dr. Sam L. Van Landingham, Research Diatomist, with the aid of a National Science Foundation grant, headquartered in the Diatom Section of the Geology Department to use its library and research facilities in connection with his bibliographic work on diatoms.

The mineral section had many acquisitions during the year. Mrs. John Melhase donated the personal, world-wide collection of her late husband, who was

Above, Robert Bjorkland, Exhibits Department Chairman, arranging a display of utensils from the Carl Rietz Food Technology Collection. Center, a soapstone carving from the Birger Anderson Collection of Contemporary Eskimo Art. Left, the Yurok house exhibit in the Wattis Hall of Man.

a noted mineralogist. The collection includes several fine cabinet specimens, about 1,000 hand-specimen minerals, and 2,000 excellent thumbnail specimens which include a great variety of superb crystal forms.

Several outstanding exhibit specimens were donated by Mr. Steven Smale, including celestite from Malagasy and sulfur from Baja California. Mr. George Mendenhall gave a fine specimen of selenite from Australia, and Mr. Jerry Wentling donated several exhibit specimens including a superior blue topaz from Ramona, California. Mr. and Mrs. William Larsen gave two extremely rare Boleite specimens from Santa Rosalia, Baja California. Mr. John Sinkankas presented garnets from Riverside County and limonite from Placerville, California. Miss Josephine L. Scripps donated a clinozoisite specimen from Baja California.

Mrs. Betty Zilen of Concord gave a magnificent 213-carat carved opal which was mined in Australia and was carved by a contemporary Chinese artist. An unusually fine black opal was given by Dr. Sylvia Earle.

Other important specimens or collections were received from Mr. Ben O. Anderson, Mr. A. L. McGuinness, Mr. James Minette, and Mr. William Estavillo.

The mineral exhibits were greatly enhanced by the installation of an enormous mass of quartz crystals from Hot Springs, Arkansas, which Mr. Jerry Wentling bought for the Academy at the Tucson Mineral show and transported to San Francisco. This was a challenging project because the specimen weighed 1300 pounds. Mineralogist William Estavillo and shop personnel mounted it, in mid-air, at the entrance to Mineral Hall. The celestite geode given by Mr. Smale was put on display in the Gem Room.

HERPETOLOGY. Alan E. Leviton, Chairman and Curator. During the fiscal year 2,057 specimens were added to the department's holdings, which number about 224,750 reptiles and amphibians. In keeping with the staff's policy of not expanding the representation of the United States herpetofauna, the accessions were from Asian, African, and Latin American localities. Loans of 1,963 specimens were sent out in 51 transactions with staff members or students at 24 institutions, among them the Academies of Sciences in Leningrad and Kiev, the British Museum, and institutions in Germany, France, Holland, Austria, Ghana, and Rhodesia. Scientists from France, Spain, and India were among the 89 researchers who came to use the collection at the Academy.

A three-year grant in the amount of $85,000 was approved by the National

The Living Arts Program commenced with demonstrations of the arts and music of the cultures represented in the Hall of Man exhibits. Above, the Australian Aborigine program attracted thousands of spectators. Far left, Robert Yunupingu, an Aborigine from Yirrkala, performing the Honey Bee Dance. Left, Bea Lopez, from the Mexican Museum, demonstrating back-strap weaving to Sandra McCosker, the Living Arts Coordinator. Left below, members of the group Jazayer present middle eastern classical music and dance. Below, Ehulani Lum and her Hula Nanis present ancient dances of Hawaii.

Above, a model of the Saturn V rocket was positioned in the Space Settlements exhibit by Senior Exhibits Preparator Stuart Meehan and Planetarium Director Lee Simon. Upper right, Anthropologist Joan Bacharach moved research materials into the new collection room. Right, Dr. Elizabeth McClintock, Chairman of the Botany Department, completed 28 years of service to the Academy and to western horticulture as she approached her retirement in 1977.

Science Foundation for the expansion of research facilities and the employment of a technical assistant.

Staff research continued on long-term projects. Dr. Leviton worked on the fauna of Southeast Asia, Mr. Drewes on frogs of the genus *Kassina* and on the physiological adaptations of xerophilic frogs, Dr. Walter C. Brown on Philippine lizards, and Mr. Papenfuss on his doctoral studies of the life history of the Mexican species *Bipes biporus*. Research Associate Steven C. Anderson studied the lizards of Iran and, with Dr. Leviton, other aspects of the herpetofauna of Southwest Asia. Dr. Otto Sokol continued his work on larval frog morphology and the higher classification of the Anura, while Dr. Allen Greer and Dr. Leviton were nearing completion of their study of the relationships of the lizard genera *Anelytropsis* and *Dibamus*.

Dr. Leviton continued to serve as Secretary-Treasurer of the Pacific Division, American Association for the Advancement of Science (AAAS), which is headquartered at the Academy. In that capacity he was involved with that Division's annual meeting which was held at San Francisco State University. As the Division's representative on the Council of AAAS and as the Academy's representative for the Association of Academies of Science, Dr. Leviton also attended the annual meeting of the AAAS held in Denver in February. He continued as Chairman of the Electronic Data Processing Subcommittee of the Herpetological Resources Committee, and in August, 1976 participated in a workshop held at the University of Kansas, to consider computerized cataloging and its application to museum collections.

ICHTHYOLOGY. William N. Eschmeyer, Chairman and Curator. The department's collection contains about 175,000 bottles, or lots, of which 1318 lots, containing 12,790 specimens, were accessioned during the year. These included Galapagos collections of Dr. John McCosker; North Pacific fishes, particularly deep water forms, which resulted from cruises in which Drs. Eschmeyer and Iwamoto participated; California fishes presented by Moss Landing Marine Laboratories through Eric Anderson; and a number of type specimens and other voucher specimens from individual ichthyologists.

The department loaned 5,649 specimens, representing 662 lots, in 85 transactions. Use of the collections and facilities for research by graduate students and ichthyologists involved 103 visitors. Five high school and college

students in residence conducted research projects under the supervision of department personnel.

The National Science Foundation continued its support, providing $34,600 for the care and management of the collection during the year. A new three-year curatorial support grant in the amount of $133,700 was awarded in the spring, to continue the existing program and to expand the area used by the department.

Dr. Eschmeyer continued his research on scorpionfishes, a large order of marine fishes, many of which are of commercial importance. This included collaborative studies with graduate student Stuart Poss and colleagues. In addition he initiated a study with Professor George E. Meyers on oreo fishes, a peculiar deepsea group, and completed a review of the deepsea family Gibberichthyidae with Donald de Sylva. He is also finishing his Peterson Field Guide to Pacific Coast fishes.

Mr. Follett published six papers on California fishes, procedural nomenclatural problems, and archaeological investigations of fish remains, and these three subject areas continue to receive his attention. Mrs. Dempster collaborated in studies with Mr. Follett, assisted the other staff members in their research, and assisted the editor of scientific publications.

Dr. Freihofer continued his detailed investigations of nerves of fishes, particularly as they are used in classification of higher groups.

Dr. Iwamoto worked on macrourid fishes, a large and important deepsea group that is receiving attention as a possible new fishery resource. This research is supported in part by the National Science Foundation. Dr. Iwamoto accepted the editorship of the Academy's scientific publications in December and devoted much of his time to processing the backlog of manuscripts that he inherited.

Mr. Loukashkin, sponsored by state funds, continued studies of the food habits of California commercial species, concentrating on the jack mackerel and market squid.

Dr. Eschmeyer, in addition to his departmental chairmanship and productive research program, is Director of Research for the Academy. This important position has many administrative responsibilities and obligations. He also serves as the Academy's representative for the Association of Systematic Collections.

INVERTEBRATE ZOOLOGY. Welton L. Lee, Chairman and Curator. Approximately 15,000 specimen lots with tens of thousands of individual specimens were added to the collection this year, which now totals 96,000 lots. The great majority of the additions were from environmental studies. For example, the U.S. Army Corp of Engineers provided more than 6,000 lots of benthic species from its Mouth of the Columbia River Environmental Baseline Study.

A most important ongoing research activity of the Invertebrate Zoology Department is the San Francisco Bay Project, now in its fourth year. With Academy support and grant funding from the National Science Foundation, The Sea Grant Program, The David and Lucille Packard Foundation, and The Leslie Salt Corporation, the project has become the definitive information source on the San Francisco Bay's invertebrate fauna. This resource, with its collections of organisms, bibliographical and library data base, and publication program, is unique and a major contribution toward an understanding of the biological dynamics of our Bay-Delta system. Collections of fully documented specimens contributed by Dr. Frank Filice of the University of San Francisco were particularly important, as was material from the South Bay collected with financial support from the Leslie Salt Corporation.

The department is cooperating with the Farallon Research Group of the Oceanic Society in a survey of the marine invertebrate fauna of Southeast Farallon Island. This involved study and collecting trips, and the preparation of experiments which will show the regeneration rate and source of the intertidal invertebrate fauna.

The interest in invertebrate animals and their importance as indicators of environmental change makes the department an invaluable resource of the scientific community. This is reflected in the requests for information and service: fifty non-profit organizations and institutions were serviced during the year, and fifteen profit-making organizations were also assisted, and there were 780 visitors seeking information.

Dr. Lee was Chairman of the National Advisory Committee on Invertebrate Collections for the National Science Foundation and Association for Systematic Zoology, and Chairman of the Subcommittee on Preservation of the Association of Systematic Collections Council on Standards.

ORNITHOLOGY AND MAMMALOGY. Laurence C. Binford, Chairman and Curator. Department collections contained about 83,250 birds and 21,500 mammals at the end of the year, 403 birds and 267 mammals having been accessioned. Representatives of several families not before in the collections were among the new specimens. During the year loans of 163 birds and 68 mammals were made, and 131 scientists and graduate students worked in the collections. A total of 588 visitors came, 189 in college class groups.

Dr. Binford continued his studies of the avifauna of Oaxaca, Mexico, and of Golden Gate Park. He also continued taxonomic work on woodpeckers and hummingbirds. He led a docent field trip to the Sacramento National Wildlife Refuge in January, and took a group of Academy members on a wildlife tour of India and Nepal in February and March. Dr. Binford was appointed Chairman of the Scientific Publication Committee in December, and has given the improvement of manuscript review, acceptance, and processing procedures his meticulous attention.

Dr. Orr, the Academy's Senior Scientist, was President of the Pacific Division, American Association for the Advancement of Science and Chairman of the Council Committee on Fellows, AAAS. He completed the manuscript of a book on the pikas of North America and Eurasia, and is nearing the completion of a field guide to the fungi of western North America. In addition, with Mrs. Orr he led an around-the-world trip for members, via northern Asia and the Middle East, another to Guatemala, and short excursions to Mendocino County and the Sierra Nevada, as well as a docent trip to Año Nuevo Point.

Mrs. Schonewald, as Senior Scientific Assistant, handled many of the specimen loans and public queries and assisted Drs. Binford and Orr with teaching and lecture materials. She led an unusually popular members' trip to the Highlands and Islands of Scotland.

SCIENTIFIC PUBLICATIONS. Tomio Iwamoto, Editor. During the year 232 pages of scientific material were published, 51 pages of *Occasional Papers* and 181 pages of *Proceedings.* Dr. Iwamoto was appointed Editor at mid-year, and Dr. Laurence C. Binford was named Chairman of the Scientific Publications Committee, the members of which were Drs. Iwamoto, Paul H. Arnaud, Jr., and William N. Eschmeyer.

Committee decisions resulted in a return to Allen Press, Inc. for printing. The typewritten, photo-offset printing process formerly used for most issues of the *Occasional Papers* was discontinued. The new double-column page, substantially larger bed-size, and nine-point type now used for both publications has increased the number of words per page by one-third, saving space and expense. Processing procedures were streamlined, resulting in a substantial increase in the production of scientific papers at year's end.

George E. Lindsay

George E. Lindsay
Director

STAFF

(as of June 30, 1977)

George E. Lindsay, *Executive Director*

Christian E. Beattie, *Assistant Director* William N. Eschmeyer, *Director of Research*

John E. McCosker, *Director of Steinhart Aquarium*

Lee W. Simon, *Director of Morrison Planetarium*

Diane L. Koepke, *Controller* Robert E. McClure, *Business Manager*

Kathleen F. Bowman, *Development Officer* Robert C. Miller, *Director Emeritus*

Robert T. Orr, *Senior Scientist* Kathy S. Bradshaw, *Secretary to the Executive Director*

AQUATIC BIOLOGY (STEINHART AQUARIUM)

John E. McCosker, *Director*
David C. Powell, *Curator*
Robert P. Dempster, *Curator Emeritus*
Tom Tucker, *Senior Aquatic Biologist*
George C. Blasiola, Jr., *Aquatic Biologist*
F. Edward Ely, *Aquatic Biologist (Herpetologist)*
Lloyd F. Gomez, *Aquatic Biologist*
Edward E. Miller, *Aquatic Biologist*
W. Walter Schneebeli, *Aquatic Collector*
William F. Rohrs, *Senior Aquarist*
Alfred D. Castro, *Aquarist*
Francis Glennon, *Aquarist*
Richard Lacer, *Aquarist (Herpetologist)*
LeRay L. Mecham, *Exhibit Preparator*
Margaret N. Tieger, *Secretary*
Melvin Donaldson, *Research Associate*
Frederic L. Frye, *Research Associate*
Michael D. Lagios, *Research Associate*
Stewart Madin, *Research Associate*
Leighton R. Taylor, Jr. *Research Associate*
Jane Culp, *Field Associate*
Charles Wright, *Field Associate*
Lynn G. Dunne, *Associate*
Lester C. Gunther, Jr., *Associate*
Edwin Janss, Jr., *Associate*
Jeffery W. Meyer, *Associate*

ANTHROPOLOGY

Joan Bacharach, *Curatorial Assistant and Acting Chairman*
Demetrios Scourtis, *Curatorial Assistant and Conservator*
Nancy Bronstein, *Research Anthropologist*
Sandra McCosker, *Living Arts Coordinator*
Elaine Cahn, *Living Arts Assistant Cordinator*
Donald J. Hagerty, *Research Associate*
Michael Moratto, *Research Associate*

ASTRONOMY (MORRISON PLANETARIUM)

Lee W. Simon, *Director*
Ingo Orlamunder, *Office Manager*
Matthew Rourke, *Acting Assistant Supervisor and Lecturer*
Cary A. Ponchione, *Chief Technician*
Kenneth A. Patterson, *Technician and Lecturer*
Charles F. Hagar, *Planetarium Associate*
Clay P. Butler, *Research Associate*
Kenneth Adams, *Lecturer*
Jose L. Mena, *Lecturer*
Bing F. Quock, *Lecturer*
Benjamin Mendelsohn, *Floor Manager and Usher*
Wayne Palsson, *Floor Manager and Usher*
Daphne Birkmyer, *Usher and Cashier*
Ilana Epstein, *Usher and Cashier*
Sandy Florence, *Usher and Cashier*
Mamie Kamada, *Usher and Cashier*
Peggie Phillips, *Usher and Cashier*
Alan Alvaro, *Usher*
Tom Childers, *Usher*
Melanie M. Hunt, *Usher*
Paul Hunter, *Usher*
Daniel Pava, *Usher*
Karen Prudhomme, *Usher*
Paul Solari, *Usher*
Marion Birkmyer, *Cashier*

BOTANY

Elizabeth McClintock, *Curator and Chairman*
Dennis E. Breedlove, *Associate Curator*
Sylvia Earle, *Curator of Phycology*
John H. Thomas, *Curator*
John T. Howell, *Curator Emeritus*
Alva Day, *Assistant Curator NSF*
Barbara Keller, *Curatorial Assistant*
Anita Noldeke, *Curatorial Assistant*
Barbara Trowbridge, *Curatorial Assistant NSF*
Randi Wilson, *Curatorial Assistant NSF*
Virginia Gregory, *Secretary*
Thomas C. Fuller, *Research Associate*
Clare B. Hardham, *Research Associate*
Robert Ornduff, *Research Associate*
Peter H. Raven, *Research Associate*
Gordon H. True, *Research Associate*
Beatrice F. Howitt, *Field Associate*

CABINET SHOP

Bradley H. Buchanan, *Superintendent*
Eric Johnsen, *Cabinetmaker*
Dennis Samuelson, *Structural Designer*
Clarke Holt, *Carpenter*

DEVELOPMENT

Kathleen F. Bowman, *Development Officer*
Frances Reed, *Secretary*
Marion Ganapol, *Membership Secretary*
Marina Balette, *Addressograph Operator*

DOCENT OFFICE

Diane Butler, *Docent Coordinator*

EDUCATION OFFICE

Lysbeth Fritz, *Education Coordinator*

ENTOMOLOGY

Paul H. Arnaud, Jr., *Curator and Chairman*
Edward S. Ross, *Curator*
Edward L. Kessel, *Curator Emeritus*
Hugh B. Leech, *Curator Emeritus*
David H. Kavanaugh, *Acting Assistant Curator*
David C. Rentz, *Acting Assistant Curator NSF*
D. Dee Wilder, *Acting Assistant Curator NSF*
Vincent F. Lee, *Senior Curatorial Assistant*
Thomas W. Davies, *Curatorial Assistant*
Stella E. Tatro, *Curatorial Assistant*
Gail Freihofer, *Secretary*
Roberta Dueball, *Curatorial Assistant NSF*
Carolyn L. Mullinex, *Curatorial Assistant NSF*
Joyce Zhovreboff, *Curatorial Assistant NSF*
Thomas S. Briggs, *Research Associate*
John A. Chemsak, *Research Associate*
Richard L. Doutt, *Research Associate*
J. Linsley Gressitt, *Research Associate*
Hartford H. Keifer, *Research Associate*
E. Gorton Linsley, *Research Associate*
Cornelius B. Philip, *Research Associate*
Edward L. Smith, *Research Associate*
P. H. Timberlake, *Research Associate*
Joseph Wilcox, *Research Associate*
Stanley C. Wiliams, *Research Associate*
Thomas J. Zavortink, *Research Associate*
Elwood C. Zimmerman, *Research Associate*
Benjamin H. Banta, *Field Associate*
Donald Patterson, *Field Associate*
Warren E. Savary, *Field Associate*
Lawrence W. Saylor, *Field Associate*
Paul S. Bartholomew, *Associate*
Ian A. Boussy, *Associate*
Robert W. L. Potts, *Associate*
David B. Weissman, *Associate*
Herman G. Real, *Patterson Fellow*

EXHIBITS

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Ernest R. Rook, *Curator*
Richard E. Cook, *Senior Artist*
Stuart Meehan, *Senior Exhibits Preparator*
Michael B. Martin, *Exhibits Preparator*
Fred Funk, *Taxidermist*
Joyce Anne Gilio, *Secretary/ Coordinator*
Nancy Bronstein, *Wattis Hall Coordinator NEA*
Sandra McCosker, *Living Arts Coordinator*
Dennis Carlson, *Designer NEA*
Shoshanah Dubiner, *Artist in Residence CAC*
Richard D. Clark, *Consulting Research Assistant*
Sylvia Ryugo, *Research Assistant*
William K. Hope, *Assistant Preparator*
Kathy Sherfey, *Taxidermist's Assistant*

GEOLOGY

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Charles W. Chesterman, *Honorary Curator of Minerals*
Sam L. VanLandingham, *Research Diatomist*
Jean B. Durham, *Senior Scientific Assistant*
Barry Roth, *Senior Scientific Assistant for Malacology*
William Estavillo, *Mineralogist*

Enid Cook, *Secretary*
Mary Alice Tatarian, *Secretary*
William F. Barbat, *Research Associate*
A. L. Brigger, *Research Associate*
Ian Campbell, *Research Associate*
Clifford Church, *Research Associate*
Eugene Coan, *Research Associate*
Alan J. Galloway, *Research Associate*
Margaret M. Hanna, *Research Associate*
York T. Mandra, *Research Associate*
Mahlon V. Kirk, *Field Associate*
William D. Pitt, *Field Asscciate*
Stanley P. Thompson, *Field Associate*
David Cerkel, *Associate*
Albert Mahood, *Associate*
Raj Guruswami-Naidu, *Associate*
Jean F. D. Smith, *Associate*

HERPETOLOGY

Alan E. Leviton, *Curator and Chairman*
Robert C. Drewes, *Acting Assistant Curator*
Margaret Berson, *Secretary*
Angel C. Alcala, *Research Associate*
Steven C. Anderson, *Research Associate*
Walter C. Brown, *Research Associate*
Allen Greer, *Research Associate*
Mahmoud Latifi, *Research Associate*
Malcolm R. Miller, *Research Associate*
George S. Myers, *Research Associate*
Otto Sokol, *Research Associate*
Lawrence W. Swan, *Research Associate*
John Gasperetti, *Field Associate*
Theodore J. Papenfuss, *Field Associate*
Brett C. Stearns, *Associate*

ICHTHYOLOGY

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Key to department abbreviations

An	Anthropology	*En*	Entomology	*Ic*	Ichthyology	*Li*	Library
Aq	Aquarium	*Ex*	Exhibits	*ID*	Information Desk	*M*	Development/Membership
Bo	Botany	*Ge*	Geology	*IS*	Instrument Shop	*OM*	Ornithology and Mammalogy
Do	Docents	*He*	Herpetology	*IZ*	Invertebrate Zoology	*PC*	Picture Collection

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CALIFORNIA ACADEMY OF SCIENCES

BALANCE SHEETS — JUNE 30, 1977

ASSETS	Current funds: General operating	Current funds: Restricted to research	Special purpose fund	Endowment fund	Building fund
Cash:					
Commercial accounts	$ 30,837	$ 885	$ 73,528	$ 2,042	$ 16,622
Savings accounts	—	257,198	218,621	4,034	—
	30,837	258,083	292,149	6,076	16,622
Receivables:					
Research grants (note 2)	—	407,394	—	—	—
Accrued interest and dividends receivable	20,824	—	19,238	—	—
Other	45,932	1,916	—	—	—
	66,756	409,310	19,238	—	—
Inventory of guidebooks, at cost	5,603	—	—	—	—
Prepaid expenses	30,162	—	—	—	—
Investments (note 3):					
Commercial property, including a full depreciated building	—	—	—	608,084	—
Marketable securities	—	—	3,280,358	2,123,116	—
Due from other funds (including $930 from Dunaway Unitrust)	—	10,054	200,294	—	98,961
Buildings (note 4)	—	—	—	—	—
Collections, library and equipment (note 5)	—	—	—	—	—
Unamortized lease costs (amortized on the straight-line basis over 40 years)	4,914	—	—	—	—
Total assets	$138,272	$677,447	$3,792,039	$2,737,276	$ 115,583
LIABILITIES AND FUND BALANCES					
Liabilities:					
Accounts payable	30,080	—	—	—	—
Accrued expenses	9,684	—	—	—	—
Other liabilities	14,666	—	—	—	—
Due to other funds	83,106	—	65,728	159,545	—
Total liabilities	137,536	—	65,728	159,545	—
Fund balances:					
Current unrestricted, available for general operations	736	—	—	—	—
Current restricted, designated by donors for:					
Research grants	—	677,447	—	—	—
Special purposes	—	—	2,475,092	—	—
Irvine anthropology curatorial chair	—	—	537,790	—	—
Unexpended plant improvements	—	—	(32,643)	—	—
Current restricted, under board discretion	—	—	746,072	—	—
Endowment fund, under board discretion	—	—	—	2,577,731	—
Building fund	—	—	—	—	115,583
Fund balances	736	677,447	3,726,311	2,577,731	115,583
Total liabilities and fund balances	$138,272	$677,447	$3,792,039	$2,737,276	$ 115,583

See accompanying notes to financial statements.

CALIFORNIA ACADEMY OF SCIENCES

STATEMENT OF CURRENT FUNDS — GENERAL OPERATING REVENUES, EXPENSES, TRANSFERS AND FUND BALANCE

YEAR ENDED JUNE 30, 1977 WITH COMPARATIVE FIGURES FOR 1976

	1977	1976
Revenues:		
Support from the public:		
Corporate contributions	$ 42,670	$ 44,350
Individuals, trusts and private foundations	61,453	52,518
Membership dues	144,472	135,729
Total support from the public	248,595	232,597
Operating income:		
City and County of San Francisco support of operations (note 8)	863,737	815,595
Fees and grants from others	47,607	36,219
Planetarium (including Laserium income of $53,525 in 1977 and $61,380 in 1976)	213,578	209,500
Admissions	398,786	372,203
Sales desk royalty	20,411	19,054
Restaurant royalty	80,041	76,367
Other	45,304	48,161
Total operating income	1,669,464	1,577,099
Investment income:		
Net rent from commercial building	205,629	178,077
Interest and dividends	125,887	113,486
Total investment income	331,516	291,563
Total revenues	2,249,575	2,101,259
Expenses:		
Aquarium and museum	1,137,859	1,002,728
Departmental research and curatorial activity	561,197	486,405
Planetarium	101,045	90,661
General and administrative	689,461	574,689
Employees' pension annuity (note 6)	54,367	46,897
Total expenses	2,543,929	2,201,380
Excess of expenses over revenues	(294,354)	(100,121)
Transfers from other funds	304,100	76,000
Excess of revenues and transfers over expenses	9,746	(24,121)
Fund balance (deficit) at beginning of year	(9,010)	15,111
Fund balance (deficit) at end of year	$ 736	(9,010)

See accompanying notes to financial statements.

CALIFORNIA ACADEMY OF SCIENCES

STATEMENT OF CHANGES IN FUND BALANCES
YEAR ENDED JUNE 30, 1977

	Current funds				
	General operating	Restricted to research	Special purpose fund	Endowment fund	Building fund
Balance (deficit) at beginning of year	$ (9,010)	$396,856	$4,221,627	$2,594,904	$ (595,182)
Additions:					
Contributions, grants and appropriations for endowments and special purposes	—	611,994	280,009	82,931	53,700
Interest and dividend income	—	6,405	118,869	—	—
Laserium receipts	—	—	150,402	—	—
Gain on sale of securities	—	—	28,074	19,545	1,872
Gain on sale of land	—	—	50,304	—	—
Other	—	91,293	105,184	—	—
Total additions	—	709,692	732,842	102,476	55,572
Deductions:					
Excess of expenses over revenues	294,354	—	—	—	—
To finance expenditures of research grants	—	304,127	—	—	—
Indirect costs charged to research grants	—	46,807	—	—	—
Amounts expended for furniture, fixtures and equipment	—	78,167	27,677	7,483	8,762
Amounts expended for construction	—	—	—	—	4,989
Amounts expended for professional services	—	—	31,257	—	7,970
Exhibits	—	—	102,902	—	—
Other	—	—	191,922	166	5,386
Total deductions	294,354	429,101	353,758	7,649	27,107
Transfers between funds	304,100	—	(874,400)	(112,000)	682,300
Balance at end of year	$ 736	$677,447	$3,726,311	$2,577,731	$ 115,583

See accompanying notes to financial statements.

ACCOUNTANTS' REPORT

The Board of Trustees
California Academy of Sciences:

We have examined the balance sheets of the funds of the California Academy of Sciences as of June 30, 1977 and the related statement of current funds—general operating revenues, expenses, transfers and fund balance and statement of changes in fund balances for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Under generally accepted accounting principles, expenditures for furniture, fixtures and equipment should be capitalized. The California Academy of Sciences charges such purchases to current expenses, the effect of which is more fully described in note 9.

In our opinion, except as noted in the preceding paragraph, the aforementioned financial statements present fairly the financial position of the California Academy of Sciences at June 30, 1977 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat, Marwick, Mitchell & Co.

Peat, Marwick, Mitchell & Co.
San Francisco, California
September 9, 1977

CALIFORNIA ACADEMY OF SCIENCES

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 1977

1. Summary of Significant Accounting Policies

The Academy uses the accrual method of accounting with revenue recorded when earned and expenses recorded when incurred. Government grants are recognized in full when awarded. Gifts of specimens and collections are not included in the financial statements.

Donated materials and services are not recorded.

The Academy has the following funds:

a. Current General Operating Fund—This fund accounts for resources used in carrying on the routine operations of the Academy in accordance with the limitations of its charter and bylaws. The governing board exercises discretionary control over this fund.

b. Restricted Funds:

1. The current "restricted to research" fund accounts for gifts and grants restricted to research projects. Certain of the general operating fund expenditures are also for research.

2. The special purpose fund accounts for resources contributed to the Academy for specific purposes, other than research projects. The resources are currently available for use, but expendable only for the purposes specified by the donors. Funds donated for plant improvements and the Irvine curatorial chair for anthropology are included in the special purpose fund category in the financial statements. Portions of the funds contributed for the use of various aquarium and museum departments may be designated by the Board of Trustees to general operations.

3. The building fund accounts for resources contributed specifically for the purpose of constructing the Fish Roundabout and the Wattis Hall of Man.

c. The endowment fund is comprised of unrestricted gifts and bequests. Unrestricted gifts in excess of $10,000 are credited to this fund. The principal amount of the gifts and bequests is not maintained intact in perpetuity. Transfers from the endowment fund and dispositions are made at the discretion of the governing board. The endowment investment income is credited, as earned, to the current general operating fund.

2. Research Grants Receivable

Grants receivable represent amounts pledged to the Academy for certain operations and for the completion of designated projects in future years. The grants will be collected as expenditures are made for the designated project. A summary of grants receivable follows:

National Science Foundation	$359,662
National Endowment of the Arts	47,732
	$407,394

3. Investments

Investments are recorded at cost or, if acquired by gift, at their fair market value at the date of acquisition. A summary of the current market value of the marketable securities for each fund follows:

	Book value	Market value
Special purpose fund	$3,280,358	$3,363,870
Endowment fund	$2,123,117	$2,079,090

The Academy owns an eleven story, fully depreciated office buiilding located in the City of San Francisco. The value as recorded on the books of account represents the cost of the land.

4. Buildings

Under the terms of the Charter of the City and County of San Francisco, no one other than the City may hold title to buildings on City property. As the Academy facilities in Golden Gate Park are acquired, title is transferred to the City and County of San Francisco. The buildings were valued at $18,747,994 by independent appraisal in 1976.

5. Collections, Library and Equipment

Collections, library and equipment are expensed in the year of acquisition. The Academy staff has estimated the replacement cost of collections, library, and equipment to be in excess of $10,000,000.

6. Employees' Pension Annuity

On January 1, 1964, the Academy adopted a pension annuity plan for all regular full-time staff members under the age of 59 as of that date. On January 1, 1976, this plan was amended to comply with the Employee Retirement Income and Security Act of 1974.

Under the provisions of the Plan, the Academy and the employees each fund one-half of the pension cost. The Academy's contributions are based on 5% of the amount of salary subject to Social Security tax and 7½% of the amount of salary above the Social Security tax base. Total pension expense for the year was $54,367. There is no past service liability, and it is the Academy's policy to fund current pension costs.

7. Trusts

The Academy is the ultimate beneficiary under an irrevocable living trust in the amount of $150,036 (market value $151,659). The income of the trust is paid to the grantors and the Academy bears the cost of all trust operations. The assets of the trust are not shown in the accompanying financial statements.

The Academy is the trustee and a fifty percent beneficiary under each of two irrevocable unitrust agreements which, together, had a market value at June 30, 1977 of $935,198. Each grantor receives an annual amount equal to six percent of the net fair market value of the assets of the respective unitrust. These trusts absorb the costs of their operations. The assets of the trust are not shown in the accompanying financial statements. Distributions under the unitrust agreements, for the fiscal year ended June 30, 1977 totaled $48,559.

8. Support from the City and County of San Francisco

Section 6.404d of the Charter of the City and County of San Francisco states that the City shall provide funds necessary for the maintenance of the Steinhart Aquarium and funds deemed proper for the maintenance of the Academy buildings. During the fiscal year ended June 30, 1977, the Academy received $863,737 from the City and County of San Francisco for this support.

In addition, the City provided Federal funds for the employment of three janitors, three museum guards and two account clerks at the Academy. These eight persons were assigned as a result of the Comprehensive Employment and Training Act of the Federal Government. The amount of these Federal funds has not been included in the accompanying financial statements.

9. Furniture, Fixtures and Equipment

The Academy departs from generally accepted accounting principles in that it expenses such assets as acquired instead of capitalizing them and amortizing the costs over the useful lives thereof. During the year, the Academy acquired furniture, fixtures and equipment costing $122,089.

10. Income Taxes

The Academy is qualified as a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code and is not a private foundation. The Academy is also tax-exempt under the laws of the State of California.

CALIFORNIA ACADEMY OF SCIENCES
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